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# A New Species of *Weinmannia* (Cunoniaceae: Cunonieae) from Southern Ecuador

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**ABSTRACT.** *Weinmannia auriformis* is described and illustrated from the Cordillera del Cóndor region, Ecuador. It is distinguished by its small, auriform, revolute, entire-margined leaflets and by the dense tomentose pubescence on its branchlets, leaves, stipules, inflorescences, and calyx lobes. This new endemic species is only known from one sandstone mountain of the Cordillera de Huaracayo, east of the Cordillera del Cóndor.

**RESUMEN.** Se describe y se ilustra *Weinmannia auriformis* de la región de la Cordillera de Cóndor, Ecuador. Esta especie se distingue por sus folíolos pequeños que se asemejan a unas orejas con márgenes enteros y un hirsuto denso, pubescente, en sus ramas pequeñas, sus hojas, sus estípulas, sus inflorescencias y los lóbulos del cáliz. Esta nueva especie se encuentra en un cerro formado por roca arenisca en la Cordillera de Huaracayo al este de la Cordillera del Cóndor.

**Key words:** Cunoniaceae, Cunonieae, Ecuador, Neotropics, South America, *Weinmannia*.

The family Cunoniaceae is composed of 26 genera and about 300 species (Bradford & Barnes, 2001). The widespread genus *Weinmannia* L. is made up of approximately 150 species of trees and shrubs, more than half of which are found in the tropics (Bradford & Barnes, 2001). In the Neotropics, the genus ranges from southern Mexico to southern Chile (Harling, 1999). Ecuadorian *Weinmannia* species have leaves that are opposite, decussate, and simple or imparipinnately compound (all Ecuadorian species with compound leaves have winged rachises except for *W. trianaea* Weddell), and interpetiolar stipules (Harling, 1999). All Ecuadorian species of the genus have stereotypical flowers that are small, white, bisexual, and 4-merous, borne on unbranched spicate or elongate racemose inflorescences (i.e., pseudoracemes). *Weinmannia* species also have distinctive fruits that are small, septicidal, 2-valved capsules that have 2 persistent styler beaks, and lobed nectary disks located beneath the gynoecium (Harling, 1999). Harling's (1999) treatment of Cunoniaceae for the *Flora*

of Ecuador included 26 species; however, an additional undescribed species has been collected from the Cordillera del Cóndor region near the Peru–Ecuador border. A color photograph of the type collection can be found on the searchable W3 TROPICOS database at: <http://mobot.mobot.org/W3T/search/vast.html>.

***Weinmannia auriformis*** Z. Rogers, sp. nov.

**TYPE:** Ecuador. Morona Santiago: Cantón Limón Indanza, Cordillera del Huaracayo, E of Cordillera del Cóndor and Río Coangos, Cerro Ijiach Naint, flat-topped sandstone mountain, E of Shuar village of Tinkimints, 3°15'49"S, 78°10'13"W, 2000 m, 21 Mar. 2001, D. Neill, P. Berry, J. Manzanares & L. Jost 13112 (holotype, QCNE; isotypes, GB, MO-5300000, NY, QCA). Figure 1.

Haec species *W. loxensi* et *W. mariquitae* maxime similis, sed a hac ramulis foliis inflorescentia calyceque indumento tomentoso denso vestitis, foliolis 1.3–6.6 × 1.0–5.0 mm, margine semper integris praesertim apice revolutioribus, pseudoracemo compacto 1.1–3.1 cm tantum longo atque florum minorum lobulis calycinis 0.8–1.2 × 0.4–0.6 mm, ab illa foliolis et rhachide foliari valde concavis distinguitur.

Shrubs or trees 0.5–4 m. *Branchlets* slender, terete, red-black, tomentose, becoming less dense with age, denser at nodes, the trichomes simple, unicellular to 1.0 mm long. *Leaves* imparipinnate, 1.3–3.3 × 0.3–0.9 cm; leaflets 5- or 6-paired (rarely 4- or 7-paired), 1.3–6.6 × 1.0–5.0 mm, auriform to cochleariform, strongly concave, coriaceous, waxy and shiny, apex slightly apiculate, base obtuse, margin entire, strongly revolute, especially at apex, upper surface scrobiculate and rugose, sparsely tomentose, denser along lower half of midvein, lower surface smooth, tomentose along midvein, denser along lower half, the trichomes simple, unicellular to 1.0 mm long, midvein slightly impressed above, slightly raised below, secondary veins inconspicuous above and below, all leaflets similar in size and shape; rachis winged, tomentose above, denser below, especially pubescent at point of petiolule attachment, trichomes similar to those



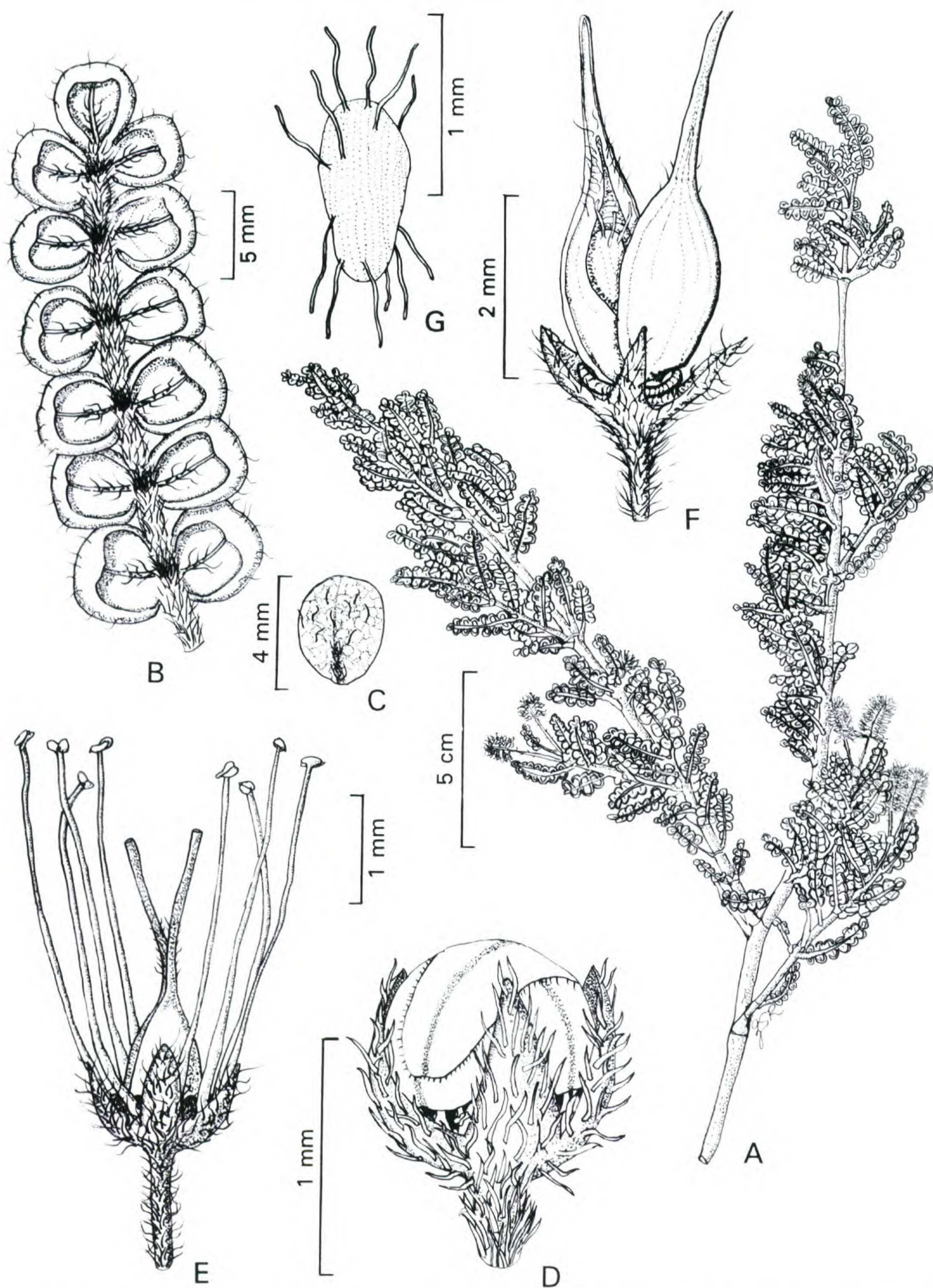


Figure 1. *Weinmannia auriformis* Z. Rogers. —A. Branchlet with pseudoracemes. —B. Abaxial surface of compound leaf. —C. Adaxial surface of leaflet. —D. Flower bud showing the corolla cap separation. —E. Mature flower after the corolla has separated. —F. Mature capsule with persistent nectary disk and styles. —G. Seed. All illustrations drawn by Zachary Rogers from the MO isotype (Neill *et al.* 13112, MO-5300000).



of the leaflets, rachis wings  $2.4\text{--}5.0 \times 0.8\text{--}1.7$  mm, elliptical to obovate, concave, strongly revolute, coriaceous, often obscured by dense pubescence; petioles terete,  $2.5\text{--}4.5$  mm long, tomentose to slightly hirsute; stipules interpetiolar, free, caducous,  $2.3\text{--}4.7 \times 2.1\text{--}4.5$  mm, broadly ovate, membranaceous to subcoriaceous, red-tinged, apex rounded, base truncate, margin entire, outside surface densely tomentose except along margin, inside surface glabrous and rugose, the trichomes similar to those of the leaflets, veins inconspicuous. *Pseudoracemes* usually in pairs,  $1.1\text{--}3.1$  cm long; rachis densely tomentose, trichomes simple, unicellular to  $0.8$  mm long; fascicles densely congested, 2- or 3- to 4-flowered; bracteoles  $0.5\text{--}1.1 \times 0.3\text{--}0.8$  mm, narrowly oblong, membranaceous, apex acute, base truncate, margin entire, completely glabrous, usually persistent; pedicels  $0.5\text{--}1.2$  mm long, densely tomentose, trichomes similar to those of the inflorescence. *Flowers* 4-merous, actinomorphic, bisexual, diplostemonous; calyx lobes 4,  $0.8\text{--}1.2 \times 0.4\text{--}0.6$  mm, narrowly ovate, membranaceous, red- or green-tinged, apex acute, base truncate, margin entire, outside surface tomentose, denser along lower half of midvein, inside surface glabrous, trichomes simple, unicellular to  $0.5$  mm long; petals 4, free, caducous, often falling as a unit before completely open,  $1.1\text{--}1.7 \times 0.7\text{--}1.4$  mm, broadly obovate to broadly elliptic, membranaceous, white, apex rounded, sessile, margin entire, ciliate, midvein conspicuous; stamens 8,  $2.4\text{--}4.0$  mm long; filaments free, slender, flattened,  $1.5\text{--}3.8 \times 0.2\text{--}0.4$  mm, glabrous; anthers introrse,  $0.2\text{--}0.5 \times 0.2\text{--}0.4$  mm, orbicular, apex short acuminate, base slightly cordate, longitudinally dehiscent, versatile; nectary disk annular, consisting of 8 concrescent lobes, persistent in fruit; ovary bicarpellate, syncarpous,  $0.8\text{--}1.4 \times 0.5\text{--}0.8$  mm, red-tinged, glabrous except for ciliate hairs where the styles meet; styles 2, divergent,  $1.4\text{--}1.5$  mm long; stigmas simple, capitate, persistent in fruit; ovules 4 to 6 per locule. *Fruits* septicidal capsules,  $3.9\text{--}5.5 \times 1.7\text{--}2.2$  mm (length measurement includes persistent styles), ovoid-oblong, red- or brown-tinged, costate; seeds  $0.9\text{--}1.1 \times 0.5\text{--}0.6$  mm, widely elliptic to elliptic, longitudinally ribbed, testae with few trichomes, simple, unicellular,  $0.3\text{--}0.5$  mm long.

*Distribution and habitat.* *Weinmannia auriformis* is an endemic species known only from the summit of Cerro Ijiach Naint, which is an isolated steep-sided sandstone mountain with a summit around 2000 m. The Cerro is part of the Cordillera de Huaracayo mountain range to the east of the Cordillera del Cóndor range. The locality is covered

by a dense windswept "dwarf" forest, characterized by a low tree canopy layer to 4 m and a dense, scrubby, shrub layer to 2 m (D. Neill, pers. comm. 2001).

*Affinities.* According to the key in the treatment of the Cunoniaceae of Ecuador (Harling, 1999), *Weinmannia auriformis* would fit somewhere between *W. mariquitae* Szyszylowicz and *W. loxensis* Harling, but the new species more closely resembles *W. mariquitae*. All three species have imparipinnate leaves shorter than 5 cm in length with 4–8 leaflet pairs per leaf, and all three have elongated pseudoracemes. However, *W. auriformis* is easily distinguishable from *W. mariquitae* by its distinctive leaflets, which are ear-shaped, small ( $1.3\text{--}6.6 \times 1.0\text{--}5.0$  mm), slightly apiculate at the apices, revolute, entire, lacking prominent secondary venation, and adaxially pubescent. In contrast, *W. mariquitae* has larger, more elongated leaflets ( $0.9\text{--}2.0 \times 0.5\text{--}1.2$  cm) that are adaxially glabrous with crenate-dentate margins and prominent secondary venation.

Other important distinctions are that *W. auriformis* has much shorter (i.e., more densely compacted) pseudoracemes ( $1.1\text{--}3.1$  cm), than *W. mariquitae*, which has 3.5–12 cm long pseudoracemes; *W. auriformis* has smaller ( $0.8\text{--}1.2 \times 0.4\text{--}0.6$  mm) pubescent calyx lobes, *W. mariquitae* has larger glabrous lobes ( $1.5\text{--}1.8 \times 0.9\text{--}1.0$  mm); and *W. auriformis* has pubescence on the rachis wings, whereas the wings of *W. mariquitae* are glabrous.

On the other hand, *W. auriformis* is clearly distinct from *W. loxensis* because the leaflets of *W. loxensis* are smaller ( $0.2\text{--}0.4 \times 0.15\text{--}0.2$  cm), flat, glabrous, and tridentate along the margin. *Weinmannia loxensis* also has flat rachis wings and smaller capsules that only reach 2.5 mm in length.

*Ecology.* This species, like many others that are evidently endemic to the Cordillera del Cóndor region, appears to be edaphically restricted to the nutrient-poor sandstone table-top mountains that characterize the area. The new species has been found on only one such summit so far, about 1 km<sup>2</sup> in area, but further floristic exploration of the area may reveal additional localities. The area is not protected formally, and potential threats from mining and other activities could affect this and many other locally endemic species. The entire region merits conservation actions, which should include participation from the indigenous Shuar who inhabit the valleys and lower slopes of the mountains (David Neill, pers. comm.).

*Etymology.* The specific epithet refers to the ear-like shape of the small leaflets of the species.



*Paratypes.* ECUADOR. **Morona Santiago:** Cantón Limón Indanza, Cordillera de Huaracayo, E of Cordillera del Cóndor and Río Coangos, Cerro Ijiach Naint, flat-topped sandstone mountain, E of Shuar village of Tinkimints, ridge below W side of summit, 03°15'49"S, 78°10'28"W, 1950 m, 20 Mar. 2001, *D. Neill, P. Berry, J. Manzanares & L. Jost 13083* (AAU, LOJA, MO-5290000, QCNE, US).

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